

REMARKS/ARGUMENTS

This paper is being filed in response to the Office Action of March 10, 2006. Because this paper is filed within the three-month deadline imposed by the Examiner, the Applicants respectfully submit that no extension of time fees are due in connection with the filing of this paper. In the event the Applicants are mistaken, the Commissioner is hereby authorized to deduct any required fees and, in particular, any fees due under 37 C.F.R. 1.17(a) in connection with this or future replies.

The Applicants acknowledge the election, without traverse, of claims 1-8 and 11-16 by way of telephone conversation between the Examiner and the Applicants' agent, Fraser Rowand, on March 2, 2006. The Applicants reserve the right to file a divisional application in connection with the unelected subject matter.

The Office Action included a rejection under 35 U.S.C. § 101 of claims 5-8 on the basis that the claimed data structure was directed to non-statutory subject matter. The Applicants presume that the Examiner intended to issue the rejection under 35 U.S.C. § 101 to claims 4-8, since claim 4 is the independent claim from which claims 5-8 depend. It will be noted that the Applicants have amended claim 4 to specify that the data structure is stored in a computer-readable memory device. In the Applicants' respectful submission, this amendment renders claims 4-8 compliant with 35 U.S.C. § 101 and MPEP § 2106. The amendment to claim 4 clarifies that the claim is not directed to a data structure *per se*, but rather relates to non-functional descriptive material recorded on a computer-readable medium. Therefore, the Applicants respectfully submit that claims 4-8 meet the requirements of 35 U.S.C. § 101 as being directed to statutory subject matter.

The Office Action of March 10, 2006 included a rejection of claims 1-8 and 11-16 under 35 U.S.C. § 102(e) as being anticipated by US Patent Publication

2003/0078907 (Soemo). Claims 1-8 and 11-16 were also rejected as being anticipated under 35 U.S.C. § 102(e) by US Patent No. 6,535,949 (Parker). The Applicants have carefully considered the Examiners' rejections, but respectfully traverse those rejections for the reasons that follow.

The present application is directed to a memory device or data structure stored within a memory device that is divided into a static volume and a dynamic volume. Each of the volumes includes a plurality of blocks and each of the blocks includes a plurality of sectors. As noted in the background portion of the present application, a problem with flash memory-type devices is that new data cannot be written to a sector without erasing an entire block and re-writing the entire block. A problem that arises in connection with this aspect of flash memory is that if the system loses power during the erase-write procedure, all of the data within the block may be corrupted and/or lost.

Conventional file systems, such as DOS or Unix file systems, rely upon metadata, such as inodes, to store information regarding data files, such as file size and last modification time. If a block of memory contains a dense quantity of metadata, then the loss of that data during an interrupted erase-write operation can be catastrophic for the overall file system.

Accordingly, the present invention proposes that the memory device be divided into a static volume and a dynamic volume, wherein the dynamic volume relates to data that is more frequently updated or changed as compared to the static volume. Within the dynamic volume, each of the dynamic blocks have one sector allocated for metadata and the remaining sectors allocated for regular data. The static blocks may include multiple sectors for metadata with the remaining sectors available for regular data.

In this manner, the present application ensures that loss of a dynamic block limits the damage to one sector of metadata and the remaining sectors of regular data.

The Soemo reference cited by the Examiner describes a data storage system for a database. The reference describes storing a portion of files in a static memory device and a portion of files in a dynamic memory device. As shown in Figure 3, a catalogue (49) may be located at the beginning of a static table file stored in flash data memory. Similarly, a catalogue (49) may be located at the beginning of a dynamic table file stored in flash data memory. Accordingly, Soemo appears to describe the division of a memory device into a static volume and a dynamic volume. The reference provides no teaching regarding the allocation of sectors within a block for metadata and/or other data. Accordingly, Soemo fails to teach or suggest any step of allocating one sector of a dynamic block for metadata and the remaining sectors in the dynamic block for other data. Moreover, the Soemo reference appears to be directed to an entirely different problem or concern with storing database tables.

The Parker reference cited by the Examiner relates to log-structured file systems. These types of file systems are designed for use in association with flash memory. They do not contain metadata separate from the data records themselves. The records incorporate metadata in a header. A log based file system is designed to function by adding updated data records contiguously. To update a record, the out-of-date record is designated as inactive by switching a validity bit from a one to a zero and the updated data is added to the end of the log as a new record. The Parker reference relates to the process of consolidating and removing inactive records from a log-structured file system.

Nowhere does Parker teach or suggest allocating one sector within a dynamic block for containing metadata and designating the remaining sectors for other data. In

fact, because Parker relates to a log-structured file system, Parker does not deal with metadata apart from the header information in each record.

In the Applicants' respectful submission, neither Soemo nor Parker teach or suggest the features claimed in the present application. In particular, neither of the cited references teach or suggest a dynamic volume in which each of the dynamic blocks have one sector allocated for metadata and the remaining sectors allocated to other data, as claimed in independent claims 1, 4, 11, and 14 of the present application. Accordingly, the Applicants respectfully request that the Examiner withdraw his rejections under 35 U.S.C. § 102(e).

In view of the foregoing amendments and submissions, the Applicants respectfully request reconsideration and allowance of the present application. Should the Examiner have any questions with regard to these submissions, please contact the Applicants' agent, Fraser Rowand, at 416-868-1482. If the Examiner is inclined to maintain his substantive rejections, the Applicants respectfully request a telephone interview to further discuss the Examiner's rejections and the Applicants' arguments.

Respectfully Submitted,
LIN, Lin, et al.

By: 

Fraser D. Rowand, Regn. No. 53,870

Place: Toronto, Ontario, Canada
Date: May 30, 2006
Tele No.: 416-868-1482